conducted in Europe. **RESULTS:** The search identified 25.135 articles, 889 titles were included for further screening and 409 abstracts for the article review step. A total of 308 abstracts did not meet the inclusion/exclusion criteria, leaving a pool of 101 articles for full text evaluation. Overall, 10 systematic reviews were identified, with 238 primary studies, 129 conducted in Europe. The sample sizes from the included primary studies from Europe revealed 20 to 15.343 patients with a mean of 514. Chronic conditions investigated were: heart failure, chronic obstructive pulmonary disease, diabetes, and cancer. Of the outcomes more frequently studied, integrated care appeared to improve quality of life and reduce hospitalization. But often results remained inconclusive. **CONCLUSIONS:** Providing a conclusion across the different chronic conditions is not possible. Therefore, only disease specific conclusions can be drawn. Our review suggests that integrated care might be advantageous for specified groups of patients, e.g. heart failure. Furthermore, it remains unclear which specific component is associated with the highest benefit for patients across chronic conditions.

PHS72

AGE-RELATED EMERGENCY DEPARTMENT RELIANCE (EDR) AND HEALTH CARE RESOURCE UTILIZATION IN PATIENTS WITH SICKLE CELL DISEASE (SCD)

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OBJECTIVES: For SCD patients, inadequate care during pediatric to adult transition may result in increased emergency department (ED) utilization. Emergency department reliance (EDR: total ED visits/total ambulatory [outpatient+ED] visits) identifies the proportion of ED visits in relation to all ambulatory visits. This study aimed at investigating age-related patterns of EDR and associated health care costs in SCD patients. **METHODS:** State Medicaid data from Florida, New Jersey, Missouri, Iowa, and Kansas were analyzed. Patients with ≥2 SCD diagnoses (ICD-9 282.6x) and ≥1 blood transfusion were included. Quarterly rates of EDR and SCD complication-related ED visits as well as health care costs were evaluated. Based on published thresholds, high EDR was defined as >0.33. Regression analyses were used to assess risk factors for high EDR and calculate adjusted costs difference between patients with high versus low EDR. **RESULTS:** A total of 3208 patients were identified; mean (SD) observation period was 6.5 (3.2) years. Mean ED visits/quarter increased from 0.76 to 2.23 between age 15 and 23, reaching a peak of 2.9 at age 36. The most common SCD complication-related ED visits were pain, infection, and pneumonia. EDR rose from 0.15 to 0.29 between age 15 and 23, and remained high thereafter. Patients were more likely to have high EDR during the post-transition period (≥18 years old, odds ratio [OR]: 2.38, p<0.001) and when experiencing an SCD complication (OR: 4.18, p<0.001). Patients with high EDR incurred higher inpatient and ED costs, resulting in higher total costs (high vs. low EDR, adjusted costs difference, OP: -$285; IP: $3,485; ED: $120; Rx: -$91; total: $3,086, p<0.001 for all). **CONCLUSIONS:** Compared to children, SCD patients transitioning to adulthood relied more on ED for their care and those with high EDR incurred higher health care costs, highlighting the need to improve access to care for transitioning and adult SCD patients.

PHS73

PHARMACIST-LED SERVICES TO PATIENTS WITH RESPIRATORY DISEASES: FEASIBLE FROM A QUALITY AND REIMBURSEMENT PERSPECTIVE?

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OBJECTIVES: Pharmacists are qualified to provide many services that are core to integrated care models. Expanding services to diverse patient populations will increase pharmacists' value. This study describes the experience, preliminary outcomes and revenue model justification associated with the implementation of pharmacist-led care for patients with respiratory disorders. **METHODS:** Medical and billing record review was performed on patients with respiratory symptoms referred to the pharmacist from May 2011 to September 2012 within a community-based, medical home, primary care practice. Patients referred were those with respiratory symptoms in which the physician sought objective lung function data and additional support to assist in properly diagnosing and treating the patient. Pharmacist interventions included collection of a detailed pulmonary and medication history, spirometry, and on applicable patients, disease state education, medication care plans and device education, and smoking cessation. Outcomes described included quality and results of spirometry testing, pharmacist recommendations, recommendations for specialist care and payment for services. **RESULTS:** Thirty-four patients (76.5% female; mean age=49.6±17.6) were seen by the pharmacist and assessed by spirometry. Spirometry met American Thoracic Society quality measures in 82.5% of tests with the following results: 64.7% normal, obstruction (8.8% mild, 14.7% moderate, 2.9% severe), and 8.8% probable restriction. Pharmacist recommendations that were implemented included the use of short-acting-beta-agonists (23.5%), corticosteroids (20.6%), anti-cholinergics (14.7%), and long-acting-beta-agonists (11.8%). Smoking cessation was recommended for 11.8% of patients and 44.1% received specialist referrals. The mean overall payment for the services provided at these visits was $144.43±36.34. **CONCLUSIONS:** Pharmacist involvement in the care of patients with respiratory disorders provided valuable, quality lung function data and care plan recommendations to physicians and education to patients. These preliminary results support the pharmacist expanding their role in the medical home by providing physician/patient care services, including spirometry, to patients with respiratory disorders from both a clinical and economic perspective.

PHS74

DRUG-RELATED PROBLEMS AND MEDICATION ERRORS: A LITERATURE REVIEW ON ECONOMIC OUTCOMES IN SUB-SAHARAN AFRICA

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OBJECTIVES: To review the literature published within the last decade related to drug-related problems and medication errors in Sub-Saharan Africa. This article provides a discussion on pharmaceutical care, with a focus on economic outcomes. **METHODS:** A search using Medline, Embase was conducted over the timeframe January 2002–December 2012 using key words such as: Sub-Saharan Africa, medication errors, economics, and pharmaceutical care. The abstract and/or full text of each article was reviewed. **RESULTS:** Twenty studies were identified for review. The most common problems in the pharmacy system were improper labeling, counterfeit drugs, lack of patient education, and inadequate drug distribution. The lack of electronic medical records and payment systems prevent the assessment of clinical cost outcomes. In a study conducted by the University of Benin, of 1500 pharmacists, 93% reported that they would be willing to participate in "any training program to enable them to practice pharmaceutical care." There is a lack of pharmacists able to provide pharmaceutical care as defined as the direct, responsible provision of medication-related care designed to achieve definite outcomes. The shortage of pharmacists is due to few training institutions, migration, inadequate pay and poor working conditions. Specifically, 25% of the world's global burden of disease is in Sub Saharan Africa, while this area comprises 3% of the world's health workers. These factors contribute to an increase in medication errors. **CONCLUSIONS:** Sub-Saharan Africa lacks the necessary governmental regulation to ensure a decrease in medication errors. The government may consider streamlining their drug distribution system through the enforcement of regulations and the use of information technology in the health care delivery system. Additional studies are needed to examine economic outcomes. Several studies provide information on cost effectiveness and quality of life, but these studies are specific to the HIV/AIDS population.

PHS75

HEALTH CARE FRAUD 2006 TO 2011

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OBJECTIVES: Health care fraud is a long-standing problem, accounting for $75 billion in 2009. Congress amended the False Claims Act (FCA) in 1986 to allow qui tam relators ("whistleblowers") to receive up to 30% of anti-fraud recoveries. Most studies investigate health care fraud involving the pharmaceutical industry, so it has not been possible to contextualize fraud involving health care sectors other than the pharmaceutical industry. Herein, we review all recently concluded major federal health care fraud investigations. **METHODS:** All cases involved health care corporations and federal FCA. Data were collected from Lexis/Nexis News (search terms: "Health care fraud", "False Claims Act" and "Qui tam"), the Taxpayers against Fraud and the DOJ websites (2006-2011). Only cases with recoveries over $5 million ("major cases") were included. Data were abstracted on allegations, financial settlements, occupations of and payments to qui tam relators. Cases are reported separately as qui tam- versus non-qui tam-initiated to document whether the Congressional intent to encourage whistleblowing achieved its intended goal. **RESULTS:** Between 2006 and 2011, 123 major qui tam health care FCA cases concluded, totaling $15.7 billion in recoveries (mean recovery: $128 million). Billing fraud, kickbacks, off-label marketing, and marketing unsafe pharmaceuticals were the most commonly implicated activities. Pharmaceutical manufacturers accounted for 31% of, and $11.3 billion (70%) in recoveries among qui tam relator cases. Also, 52 non-qui tam cases closed in this 5-year period, totaling $3.7 billion in recoveries (mean recovery: $71 million). Implicated activities included fraudulent billing, inappropriate financial relationships, off-label marketing, or marketing unsafe pharmaceuticals. **CONCLUSIONS:** In conclusion, federal investigations of fraud and abuse involving health care are increasing in both depth and breadth, and qui tam relators have an important role in detecting important fraud and abuse.

PHS76

ANALYSIS OF 2011 MEDICAID FEE-FOR-SERVICE OUTPATIENT DRUG UTILIZATION, EXPENDITURES AND PHARMACY REIMBURSEMENT RATES

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OBJECTIVES: The Patient Protection and Affordable Care Act will expand the eligibility of the Medicaid program to millions of Americans in 2014. Utilizing more generic drugs and setting appropriate pharmacy reimbursement rates could result in substantial savings to the Medicaid program. This study assessed 2011 state-level, fee-for-service Medicaid generic and brand drug utilization and expenditures, and pharmacy reimbursement rates. **METHODS**: Medicaid fee-for-service outpatient pharmacy utilization and expenditures, and reimbursement rates (ingredient cost and dispensing fees) for the year 2011 were extracted from state-level data provided from the Centers for Medicare and Medicaid Services. Descriptive analyses were performed for all variables in the data set. Linear regression analysis was performed to assess the relationship between ingredient cost, dispensing fees and drug utilization. The significance level for variables was 0.05. **RESULTS**: Fee-for-service Medicaid expenditures (n=46 states) reached $27.8 billion with drug utilization accounting for 173.4 million claims in 2011. Generic expenditures represented 17.3% of total expenditures (range=10.3%-29.2%) and